

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) An isolated protoporphyrinogen oxidase from *Nicotiana tabacum* tolerant to photobleaching herbicide, comprising a polypeptide having the amino acid sequence represented by SEQ ID NO:2 or a mutated peptide having deletion, addition, or substitution of one or more amino acids in the above amino acid sequence, wherein said mutated peptide and (1) naturally occurs in *Nicotiana tabacum*, (2) has having (1) an enzyme activity equivalent to that of the polypeptide represented by SEQ ID NO:2 and (3) (2) has tolerance to a photobleaching herbicide equivalent to that of the polypeptide represented by SEQ ID NO:2,

wherein said photobleaching herbicide is a pyrazole compound selected from the group consisting of ethyl 2-chloro-5-(4-chloro-5-difluoromethoxy-1-methyl-1H-pyrazole-3-yl)-4-fluorophenoxyacetate, ethyl 2-[5-(4-chloro-5-difluoromethoxy-1-methyl-1H-pyrazole-3-yl)-2,4-dichlorophenylamino]propionate, 4-chloro-3-[4-chloro-2-fluoro-5-methoxyphenyl]-5-difluoromethoxy-1-methyl-1H-pyrazole, 4-chloro-3-[4-chloro-2-fluoro-5-(2-propynyl)oxyphenyl]-5-difluoromethoxy-1-methyl-1H-pyrazole, ethyl 2-[2-chloro-5-(4-chloro-5-difluoromethoxy-1-methyl-1H-pyrazole-3-yl)-4-fluorophenoxy]propionate, 1-methylethyl 5-[4-bromo-1-methyl-5-(trifluoromethyl)-1H-pyrazole-3-yl]-2-chloro-4-benzoate, and 4-chloro-3-(4-chloro-2-fluorophenyl)-5-difluoromethoxy-1-methyl-1H-pyrazole.

2. (Previously presented) The isolated protoporphyrinogen oxidase tolerant to photobleaching herbicide of claim 1, comprising a polypeptide having the amino acid sequence represented by SEQ ID NO:2 with one or more amino acid deletions.

3-4. (Canceled).

5. (Previously presented) The isolated protoporphyrinogen oxidase of claim 1, comprising an amino acid sequence represented by SEQ ID NO:2.

6.-7. (Canceled).

8. (Previously presented) The isolated protoporphyrinogen oxidase according to claim 1, wherein the photobleaching herbicide is ethyl 2-chloro-5-(4-chloro-5-difluoromethoxy-1-methyl-1H-pyrazole-3-yl)-4-fluorophenoxyacetate.

9-26. (Canceled).

REMARKS

Claims 1-5 and 7-26 are all the claims pending in the application.

Applicants respectfully request entry of the Amendment Under 37 C.F.R. §1.116 filed February 10, 2003, and the Second Amendment Under 37 C.F.R. §1.116 filed July 1, 2003, in this application.

The version of the claims to which the amendments in the instant Amendment are being made are based on the entry of the two §116 Amendments. The Examiner is respectfully requested to contact the undersigned at his Washington D.C. telephone number if there is any confusion in this regard.

Claim 1 has been amended to define the organism from which the mutated peptides can be isolated.

No new matter has been added. Entry of the amendment is respectfully requested.

I. Rejection Under 35 U.S.C. §112

A. At paragraph 7 of the Advisory Action dated August 12, 2003, the rejection of claims 1 and 8 as lacking adequate written description has been maintained.

The Examiner states that the specification discloses only one member of a genus of claimed polypeptides, and that the specification fails to describe the structural features of any additional representative species of the claimed genus. The Examiner continues to assert that the claims encompass *any* protox polypeptide having the activity set forth in claim 1. The Examiner notes that the claimed mutant polypeptide is not limited to a protox from *N. tabacum*, but can be from any source and have any structure.

In response, Applicants include herewith an amendment to claim 1 such that the mutant polypeptide is limited to a mutant protox from *Nicotiana. tabacum*. The genus of

polypeptides recited in claim 1 is thus very small (only those that (1) naturally occur in *N. tabacum*, (2) have an enzyme activity equivalent to that of the polypeptide represented by SEQ ID NO:2 and (3) have tolerance to a photobleaching herbicide equivalent to that of the polypeptide represented by SEQ ID NO:2). Because all of the protox polypeptides recited in the claim occur in the same organism (*N. tabacum*), the representative species of the genus disclosed in the specification adequately supports the claimed genus.

Applicants respectfully assert that there is adequate written description support for the genus of proteins recited in amended claim 1. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

B. At paragraph 8 of the Advisory Action August 12, 2003, the rejection of claims 1 and 8 under 35 U.S.C. §112, first paragraph, as lacking enablement has been maintained.

The Examiner continues to assert that the scope of the claimed protox polypeptides is not commensurate with the enablement provided by the instant specification, which provides enablement only for the protox polypeptide of SEQ ID NO:2.

In response, Applicants again note that the claims have been amended, as discussed above, such that the scope of the claims encompasses only those proteins that are (1) derived from one organism, (2) with specific activity, and (3) with resistance to specific group of chemical compounds.

Furthermore, the teachings of the present specification provide methods for creating expression vectors containing a polynucleotide encoding a protein of the present invention (pages 7-10, 18-19), for transforming it into a plant (pages 10, 26-27), and achieving expression of the gene encoded by the polynucleotide in a plant (pages 10, 27). The specification also provides methods for screening plants expressing the gene to determine

their level of activity, and whether they encode a protein that would be encompassed with the scope of the claims (pages 27-28).

In view of the narrow scope of the claims, and the teachings provided in the specification, Applicants assert that there is sufficient guidance in the specification such that a skilled artisan would be able to practice the claimed invention as recited without undue experimentation.

Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

II. Rejection of Claims Under 35 U.S.C. §102

A. At paragraph 9 of the Advisory Action August 12, 2003, the rejection of claims 1 and 8 under 35 U.S.C. §102(b), over Ward et al., is maintained.

The Examiner states that the mutant *Arabidopsis thaliana* and *Zea mays* protox polypeptides of Ward et al. anticipate the protox proteins of the rejected claims.

The Examiner explains that while Applicants argue that the protox polypeptides of the present invention are distinct from those of Ward et al., in that Ward et al. does not teach *N. tabacum* protox polypeptides, such a limitation is not recited in the claims.

In response, Applicants again note that the claims have been amended to include only those protox polypeptides that naturally occur in *N. tabacum*. As Ward et al. does not disclose a protox polypeptide from *N. tabacum*, the protox polypeptides of the present invention are distinct from those of Ward et al. Applicants therefore assert that the amended claims are not anticipated by the disclosure of Ward et al.

Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

B. At paragraph 11 of the Advisory Action August 12, 2003, the rejection of claim 1 under 35 U.S.C. §102(e), over Volrath et al., is maintained.

The Examiner maintains that Volrath et al. teaches a protox polypeptide that is 74% identical to SEQ ID NO:2 of the instant application and resistant to pyrazole-based herbicides, and that this polypeptide anticipates the rejected claim.

The Examiner states that while Applicants argue that the protox polypeptides of the present invention are distinct from those of Volrath et al., in that Volrath et al. does not teach protox polypeptides having an enzyme activity equivalent to SEQ ID NO:2, this limitation is not recited in the claims.

As with Ward et al. above, Applicants note that the claims have been amended to recite mutant protox proteins that naturally occur in *N. tabacum* and the polypeptide of SEQ ID NO:2. Protox polypeptides from other organisms are not included in the scope of the claims. As Volrath does not disclose a protox polypeptides from *N. tabacum*, the protox polypeptides of Volrath et al. are not encompassed within the scope of the amended claims, and the amended claims are not anticipated by Volrath et al.

Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

III. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. §1.114(c)
U.S. Appl. No. 09/508,418

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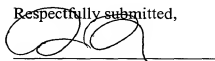
SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Respectfully submitted,



Drew Hisson
Registration No. 44,765

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